Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte WILLIAM G. WILSON
and
LAWRENCE L. MURRELL

_____

Appeal No. 1998-2228
Application No. 08/523,405

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ON BRIEF

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Before CAROFF, OWENS, and DELMENDO, Administrative Patent Judges.

CAROFF, Administrative Patent Judge.

DECISION ON APPEAL

This decision on appeal relates to the examiner's final rejection of claims 1-23 and 25-26, all the claims now pending in appellants' application.

exemplary of the subject matter embraced by the claims on appeal:

> 1. A method for the desulfurization of gases created by combustion of sulfur containing hydrocarbons comprising the steps of providing microdomains of cerium oxide on a substrate to form a cerium oxide-substrate composition and exposing the microdomains of cerium oxide to said gases, wherein said cerium oxide constitutes at least 50 weight% of said cerium oxide-substrate composition and said cerium oxide microdomains react with the sulfur in said gases to reduce the sulfur content of the effluent gas.

The following references are relied upon by the examiner as representative of the prior art:

Longo	4,001,375	Jan. 4, 1977
Kay et al. (Kay)	4,885,145	Dec. 5, 1989
Koberstein et al. (Koberstein)	5,024,985	Jun. 18, 1991
Addiego et al. (Addiego)	5,212,130	May 18, 1993
	(effective filing date:	Mar. 9, 1992)

Murrell et al. (Murrell), "Sols as precursors to transitional aluminas and these aluminas as host supports for CeO_2 and ZrO_2 micro domains," Catalysis and Automotive Pollution Control II, pp. 547-55 (Elsevier Science Publishing, Inc., New York, NY, 1991).

The following rejections are before us for consideration:

I. Claims 25-26 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter not described in the

§ 103(a) for obviousness over Murrell in view of Koberstein.

IV. Claims 15-16 and 25 stand rejected under 35 U.S.C. § 103(a) for obviousness over Murrell in view of Koberstein and Addiego.

V. Claims 13-14 stand rejected under 35 U.S.C. § 103(a) for obviousness over Murrell in view of Koberstein, Addiego, Longo, and Kay.

We have carefully considered the entire record in light of the opposing arguments presented by appellants and the examiner. Having done so, we find all of the rejections at issue to be sustainable and, accordingly, we shall affirm the decision of the examiner for the following reasons.

I.

Turning first to the rejection under the first paragraph of 35 U.S.C. § 112, we note that appellants refer to claims 18-20 and to pages 13-14 and 19-20 of their specification for support for the limitations recited in claims 25-26. However, like the examiner, we find nothing in the cited portions of the

the rate and capacity of desulfurization (claim 26) is directly

attributable to reacting a metal oxide with the cerium oxide (claim 25) or reacting a metal oxide with the alumina sorbent substrate (claim 26).

We also agree with the examiner that there is inadequate support in the specification for the entire class of "metal oxide[s]" encompassed by claims 25-26.

II.

With regard to the rejection under the second paragraph of 35 U.S.C. § 112, appellants acknowledge that the Markush group of oxides in claim 16 is presently in improper form. Although appellants express a willingness to amend claim 16 in order to cure the defect, the rejection of claim 16 as it now stands is appropriate.

As for claim 25, since there is no description of an increase in absorption capacity being attributable to reaction of a metal oxide with cerium oxide as noted above with respect to the 35 U.S.C. § 112 first paragraph rejection, the meaning and significance of "increased absorption capability" cannot be

§ 103(a), we find that the examiner has established a prima facie case of obviousness. We agree with the examiner that an ordinary artisan would have been motivated to use cerium oxide microdomain structures and an alumina "host phase," as taught by Murrell, as the cerium oxide-aluminum oxide component of the Koberstein catalyst in order to obtain the advantages suggested by Murrell. To wit, Murrell suggests that a more stable product (e.g., automotive catalyst) would be obtained with maximum surface area. In particular, see Murrell at pages 548 (first full paragraph), 551 (second and third paragraphs), 552-53 (bridging paragraph), and 555 (last paragraph).

Appellants' remarks to the contrary notwithstanding, we note that Koberstein (col. 1, ll. 21-32 and 42-48) indicates that automotive catalysts containing cerium oxide do absorb or store sulfur compounds, e.g., sulfur dioxide, present in the exhaust gases of internal combustion engines.

In referring to pages 8-10 of their specification, appellants appear to be of the view that exposure to the

ability to absorb or react with sulfur dioxide. We find this line of argument unconvincing for a number of reasons. First, Koberstein does not require annealing temperatures as high as 1,000°C. Annealing may be conducted at lower temperatures according to Koberstein (col. 2, ll. 3-5; examples 6-9). Second, appellants have not shown that annealing, at least at the lower end of the temperature range of Koberstein, would completely negate the ability of the cerium oxide catalyst to absorb or react with sulfur dioxide. Third, in view of the teachings of Murrell, one of ordinary skill in the art would expect that use of cerium oxide microdomain structures in the Koberstein catalyst would, if anything, enhance surface area stability at high temperatures.

IV., V.

With regard to the other rejections under 35 U.S.C. § 103(a), we are in substantial agreement with the examiner's position, as adequately set forth in the examiner's answer (pages 6-7 and 11-13). Accordingly, we adopt that position as our own.

regeneration) provide the requisite motivation to combine their teachings with those of Murrell and Koberstein. Appellants have provided no convincing argument to the contrary.

For all of the foregoing reasons, the decision of the examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

MARC. L. CAROFF Administrative Patent Judge	)
TERRY J. OWENS Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
ROMULO H. DELMENDO Administrative Patent Judge	)

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